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**(54) MANUFACTURE OF  
THIN FILM TRANSISTOR**

(57) Abstract:

**PURPOSE:** To perform stable  
operation characterized by high  
mobility, by using a silicon film made  
by thermal CVD of high-order silane

such as trisilane or higher as a channel semiconductor film of a thin film transistor.

**CONSTITUTION:** On an insulating substrate 1, a gate 2 comprising Ni, W, Mo and the like is formed by evaporation, sputtering and the like. A gate insulating film 3 such as a silicon oxide film and silicon nitride film is laminated by a CVD method and the like on the gate 2. A silicon film 4 of high-order silane such as trisilane or higher is formed by a thermal CVD method on the film 3. A source 5 and a drain 6, which have doublelayer structure of a P-or N-type low resistance semiconductor film and a metal film, are formed. An inverted staggered type thin film transistor is formed. The silicon film 4 is formed as follows: the substrate is heated to a temperature of about 400°C; the high order silane such as the trisilane or higher is introduced in a chamber 7; and the film 4 is formed on the surface of the substrate by thermal decomposition reaction on the substrate.

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